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10/618,880	07/14/2003	Milind M. Buddhikot	Buddhikot 9-3-11-1 (LCNT/	5872

46363 7590 01/24/2008	**EXAMINER**	
PATTERSON & SHERIDAN, LLP/	CHOI, EUNSOOK	
LUCENT TECHNOLOGIES, INC		
595 SHREWSBURY AVENUE	**ART UNIT**	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 November 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-34</u> is/are pending in the application.

    4a) Of the above claim(s) <u>25-34</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In the reply filed on 11/8/2007, the following has occurred:

*   Claim 1 is amended.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
      obviousness or nonobviousness.

4.   Claims 1, 2, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Dorenbosch et al. (US PGPUB 20040028009) in view of Oishi (US PGPUB

20020154624) and VIP: A protocol providing Host Mobility (Communications of the

ACM, August 1994).

Regarding claim 1, Dorenbosch teaches during a handoff process, the

application on the mobile station continues to use the original gateway address as the

primary SCTP address (at a level above a network level) and the gateway continues to

use the original mobile address as the primary destination address (without varying the

IP address of the mobile node used by the corresponding node the mobile node moves

intra-domain or inter-domain). SCTP is the transport layer protocol that is a level above

network layer. Dorenbosch further teaches in Fig. 2 the mobile station B must also get

the first IP address, IP A1, to be used by the gateway (identifying a mobile node to a

corresponding node, with which the mobile node communicates). Address IP A1 can be

globally unique. It can even be equal to address Y1, in which case the mobile station

needs to obtain only one address. The mobile station preferably obtains a private IP

address, IP A1 that is local to the cellular system. In that case the gateway provides

Network Address Translation between address Y1 and A1 (identifying the mobile to a

network address translation (NAT) device at a network interface level using a routable

actual IP address of the host; and mapping the actual IP address to the original gateway

IP address). NAT is known and far from trivial, because numerous applications embed

raw IP addresses in the data they exchange with peers. In such cases address

translation involves the substitution of address values in application-specific data. This

type of operation is also known. A gateway that does this type of translation is often

called an Application Level Gateway (a rule for mapping) (See Paragraph 26 and 45,

Dorenbosch).

However, Dorenbosch does not expressly teach changing the actual IP address

of the host used by the NAT device and and mapping the actual IP address to the virtual

IP address. Oishi teaches a translator makes a translation rule for associating a new

care-of-address with a virtual destination IP address (changing the actual IP address of

the host used by the NAT device and mapping the actual IP address to the virtual IP

address) (See Fig. 28 and Paragraph 100 Oishi). It would have been obvious for one

having ordinary skill in the art at the time of the invention was made to change the

actual IP address of the host used by the NAT device with a virtual IP address in order

to provide a method of enabling a communication to be continued without any

interruption even if one or both of terminals move if a protocol translation is necessary

at a junction of both networks due to a difference between protocols of these networks

accommodating one and the other terminals (See Paragraph 9 Oishi).

However, Dorenbosch and Oishi do not expressly teach without varying virtual IP

address. VIP: A protocol providing Host Mobility teaches in Fig. 9 an example of a VIP

address of Host:A remains unchanged while a temporary IP address is assigned to the

host by, say, DHCP. It would have been obvious for one having ordinary skill in the art

at the time of the invention was made to have invariant virtual IP address in order to

have scalable to the scale of the network and the total number of mobile the hosts

(Page 67 Col 2 Line 17 VIP: A protocol providing Host Mobility).

Regarding claim 2, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 1 as applied above. Dorenbosch teaches the application

on the mobile station during a handoff process continues to use the original gateway

address as the primary SCTP address (maintaining a transport level protocol

connection while the mobile node moves between a first subnet and a second subnet)

(See Paragraph 45 Dorenbosch). The gateway will further perform a transport protocol translation between SCTP and TCP/UDP (a transport level protocol) (See Paragraph 28 Dorenbosch). However, Dorenbosch does not expressly teach using the virtual IP address. Oishi teaches as applied to claim 1 above. It would have been obvious for one having ordinary skill in the art at the time of the invention was made to use a virtual IP address in order to provide a method of enabling a communication to be continued without any interruption even if one or both of terminals move if a protocol translation is necessary at a junction of both networks due to a difference between protocols of these networks accommodating one and the other terminals (See Paragraph 9 Oishi).

Regarding claim 3, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility teach the limitations of claim 1 as applied above. Oishi teaches the message is transmitted to the Mobile IP message translation and a process by the input packet filtering process (receiving a packet from an application in the mobile node). The Mobile IP message translation and the process associates a virtual source IP address with a pair of the source IP address and the care of address, makes a translation rule for associating the virtual source IP with the source IP address, and retains it in the translation table (including the virtual IP address of the mobile node as a source address, translating the virtual IP address of the mobile node to the actual IP address of the mobile node for use as the source address). Additionally, the Mobile IP message translation and process translates the care of address described in the position registration message to and transmits it to the terminal. While the current position information is described in the payload of the packet in the IPv4 Mobile IP, it is

described in the header of the packet in the IPv6 Mobile IP. (transmitting the packet with

the actual IP address from the mobile node) (see FIG. 22 and Paragraph 98 Oishi). It

would have been obvious to one having ordinary skill in the art at the time of the

invention was made to receive a packet from an application in the mobile node including

the virtual IP address of the mobile node as a source address, translate the virtual IP

address of the mobile node to the actual IP address of the mobile node for use as the

source address, and to transmit the packet with the actual IP address from the mobile

node because the Mobile IP message translation and process performs the format

translation as well as rewriting the address and then transmits the position registration

message to the terminal (See Paragraph 98 the route optimization of Oishi).

Regarding claim 4, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 3 as applied above. Dorenbosch teaches preferably the

mobile station obtains a private IP address, A1, which is local to the cellular system

(the actual IP address is a local private address). The gateway provides Network

Address Translation between address Y1, an external address, and A1 (translating the

actual IP address of the mobile node to a public IP address; and transmitting the packet

with the public IP address to the corresponding node, the mobile node and the

corresponding node being in different domains connected to each other by a public

network) (See Fig. 1 and Paragraph 26 Dorenbosch).

Regarding claim 6, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 1 as applied above. Dorenbosch teaches a mobile station

can roam from one BSS into the next BSS and connect to another AP as a part of the

same Extended Services Set (the mobile node and the corresponding node belonging

to different subnets within a common domain) (See Paragraph 23 Dorenbosch).

However, Dorenbosch does not teach the transmitted packet having the virtual IP

address of the mobile node and receiving an incoming packet from the corresponding

node by way of the NAT device, wherein the NAT device translates a destination

address of the incoming packet from the virtual IP address of the mobile node to the

actual IP address of the mobile node. Oishi teaches in Fig. 24 the DNS response packet

rewritten from the actual destination IP address to the virtual destination IP address s6

is transmitted to the terminal 41 via the DNS server 23 (See Paragraph 86 Oishi). Oishi

further teaches the message is transmitted to the Mobile IP message translation and a

process by the input packet filtering process. The Mobile IP message translation and

the process associates a virtual source IP address with a pair of the source IP address

and the care of address, makes a translation rule for associating the virtual source IP

with the source IP address, and retains it in the translation table (See Paragraph 98

Oishi). It would have been obvious to one having ordinary skill in the art at the time of

the invention was made to transmit a packet having the virtual IP address of the mobile

node and receive an incoming packet from the corresponding node by way of the NAT

device, wherein the NAT device translates a destination address of the incoming packet

from the virtual IP address of the mobile node to the actual IP address of the mobile

node in order to exchange messages at initiating a communication so as to make a

name resolving request message a clue to generating translation information, a

correspondence of an IP address, etc. (See Paragraph 5 Oishi).

Regarding claim 7, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 6 as applied above. Oishi teaches in terminals T and R in

Fig 27 a translation rule for associating with a virtual destination IP address (the

transmitted packet has a destination address that is a virtual IP address of the

corresponding node), and that the translator treats the virtual source IP address as an

IPv6 address 16 of the translator to associate r4 with 16 when making a translation rule

since a packet destined for the terminal 42 from the terminal 41 passes through the

translator 12 (the packet is transmitted to the corresponding node by way of the NAT

device, the method further comprising: translating the virtual IP address of the

corresponding node within the packet to an actual IP address of the corresponding node

in the NAT device) (See Paragraph 100 Oishi). It would have been obvious to one

having ordinary skill in the art at the time of the invention was made to transmit a packet

to the corresponding node by way of the NAT device, translating the virtual IP address

of the corresponding node within the packet to an actual IP address of the

corresponding node in the NAT device in order to exchange messages at initiating a

communication so as to make a name resolving request message a clue to generating

translation information, a correspondence of an IP address, etc. (See Paragraph 5

Oishi).

Regarding claim 8, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 7 as applied above. Dorenbosch does not teach translating

the source address of the transmitted packet from the actual IP address of the mobile

node to the virtual IP address of the mobile node, in the NAT device. Oishi teaches in

Fig 27 a DNS query from a terminal 42 is transmitted to a DNS server 22 via a DNS server 24 since the IP address corresponding to a name T of the terminal 41 is associated with a home address t6, that the translator 11 thereby makes a translation rule for associating t6 with a virtual destination IP address f4, and that the translator 11 treats the virtual source IP address as an IPv6 address 16 of the translator 12 to associate r4 with 16 when making a translation rule since a packet destined for the terminal 42 from the terminal 41 passes through the translator 12 (See Paragraph 100 Oishi). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to translate the source address of the transmitted packet from the actual IP address of the mobile node to the virtual IP address of the mobile node, in the NAT device in order to exchange messages at initiating a communication so as to make a name resolving request message a clue to generating translation information, a correspondence of an IP address, etc. (See Paragraph 5 Oishi).

Regarding claim 9, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility teach the limitations of claim 1 as applied above. Oishi teaches in Fig 17 and 18 a first translator within the first translator domain and a second translator within the second translator domain are used (using the NAT device within a first NAT domain while the mobile node communicates with a first corresponding node in a first connection initiated while the mobile node is located in the first NAT domain; and using a second NAT device within a second NAT domain as a home agent for the mobile node while the mobile node communicates with the first corresponding node or a second corresponding node in a second connection initiated while the mobile node is located in

the second NAT domain). It would have been obvious for one having ordinary skill in the art at the time of the invention was made to use the NAT device within a first NAT domain and use a second NAT device within a second NAT domain as a home agent for the mobile node while the mobile node communicates with the first corresponding node in order to provide a method of enabling a communication to be continued without any interruption even if one or both of terminals move if a protocol translation is necessary at a junction of both networks due to a difference between protocols of these networks accommodating one and the other terminals (See Paragraph 9 Oishi).

Regarding claim 10, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility teach the limitations of claim 9 as applied above. Dorenbosch does not teach using a packet processing rule for processing traffic from the mobile node and the mobile node is in the second NAT domain, the packet processing rule being obtained from a device in the first NAT domain. Oishi teaches translating formats of IP packets mutually between IPv4 and IPv6. For example, they are used for a translation between an IPv4 address and an IPv6 address. An apparatus for performing this translation is referred to as a translator (using a packet processing rule for processing traffic from the mobile node) (See Paragraph 3 Oishi). Oishi further teaches in Fig 17 and 18 the translators 12, 13 and the translation server 23-1 is used for the translation information (the mobile node is in the second NAT domain, the packet processing rule being obtained from a device in the first NAT domain). It would have been obvious for one having ordinary skill in the art at the time of the invention was made to use a packet processing rule for processing traffic from the mobile node and the mobile node is in the second NAT

domain, and to obtain the packet processing rule from a device in the first NAT domain

to provide a method of enabling a communication to be continued without any

interruption even if one or both of terminals move if a protocol translation is necessary

at a junction of both networks due to a difference between protocols of these networks

accommodating one and the other terminals (See Paragraph 9 Oishi).

Regarding claim 11, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 10 as applied above. Dorenbosch does not teach when the

mobile node moves from the first NAT domain to the second NAT domain, a mobility

manager in the second NAT device requests and receives the packet processing rule

from a mobility manager of the first NAT domain, wherein the first and second mobility

managers have centralized views of users in the first and second NAT domains,

respectively, and mappings between virtual IP addresses and actual IP addresses of

the users currently in the first and second NAT domains, respectively Oishi teaches in

Fig 17 and 18 the DNS server or translation server 23-1 have centralized views of users

in the first and second translator domains. It would have been obvious for one having

ordinary skill in the art at the time of the invention was made to provide a method of

enabling a communication to be continued without any interruption even if one or both

of terminals move if a protocol translation is necessary at a junction of both networks

due to a difference between protocols of these networks accommodating one and the

other terminals (See Paragraph 9 Oishi).

Regarding claim 12, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teach the limitations of claim 9 as applied above. However, Dorenbosch does not teach

the first and second connections partially overlap in time, so that the first and second

NAT devices act as first and second home agents for the mobile node concurrently.

Oishi teaches in Fig. 3 a communication route selected if the mobile terminal 42 moves

from the position q to a position r. The packet destined for the terminal 42 transmitted

from the terminal 41 reaches the terminal 42 via the translator 13. On the other hand,

the packet destined for the terminal 41 transmitted from the terminal 42 is transmitted to

the terminal 41 via the translator 12 and the home agent 31. It would have been obvious

for one having ordinary skill in the art at the time of the invention was made to overlap in

time for the first and second connections partially to provide a method of enabling a

communication to be continued without any interruption even if one or both of terminals

move if a protocol translation is necessary at a junction of both networks due to a

difference between protocols of these networks accommodating one and the other

terminals (See Paragraph 9 Oishi).

Regarding claim 13, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility

teaches the limitations of claim 12 as applied above. However, Dorenbosch does not

teach the mobile node has the same virtual address for both the first and second

connections. Oishi teaches in Fig. 24-45 making translation rules with virtual IP

addresses (I6, I4 , m6, and m4). Fig. 27 and 28 show the virtual IP address I6 is used

before and after the movement of terminal with a new care of address (the mobile node

has the same virtual address for both the first and second connections). It would have

been obvious for one having ordinary skill in the art at the time of the invention was

made to have the same virtual address for both the first and second connections to

provide a method of enabling a communication to be continued without any interruption even if one or both of terminals move if a protocol translation is necessary at a junction of both networks due to a difference between protocols of these networks accommodating one and the other terminals (See Paragraph 9 Oishi).

Regarding claim 16, Dorenbosch, Oishi, VIP: A protocol providing Host Mobility teach the limitations of claim 12 as applied above. However, Dorenbosch does not teach translating the virtual IP address to a public IP address in the NAT device. Oishi teaches a DNS server translating from a virtual IP address to an actual IP address (translating the virtual IP address to a public IP address in the NAT device) (See Paragraph 86 Oishi). It would have been obvious for one having ordinary skill in the art at the time of the invention was made to have translating the virtual IP address to a public IP address in the NAT device to provide a method of enabling a communication to be continued without any interruption even if one or both of terminals move if a protocol translation is necessary at a junction of both networks due to a difference between protocols of these networks accommodating one and the other terminals (See Paragraph 9 Oishi).

5.   Claims 18, 19, 21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. (US PGPUB 20020154624) in view of VIP: A protocol providing Host Mobility (Communications of the ACM, August 1994).

Regarding claim 18, Oishi teaches in FIG. 24 a sequence diagram in which the IPv6 mobile terminal in the foreign network originates a call, where t6 is an actual IP

address and s6 is a virtual IP address (a network layer for transmitting and receiving

packets; and an intermediate driver that transmits packets to the network layer and

receives packets from the network layer using a virtual IP address to identify the mobile.

node the driver transmitting packets to the network interface and receiving packets from

the network interface using a routable actual IP address to identify the mobile node).

Oishi further teaches two translators make translation rules for associating a new coa

with a virtual destination IP address (permits the actual IP address to change when the

mobile node moves intra-domain or inter-domain) (See Fig. 28 and Paragraphs 99 and

100 Oishi). However, Oishi does not expressly teach without a corresponding change in

the virtual IP address. VIP: A protocol providing Host Mobility teaches in Fig. 9 an

example of a VIP address of Host:A remains unchanged while a temporary IP address

is assigned to the host by, say, DHCP. It would have been obvious for one having

ordinary skill in the art at the time of the invention was made to have a mobile node a

corresponding change in the virtual IP address in order to have scalable to the scale of

the network and the total number of mobile the hosts (Page 67 Col 2 Line 17 VIP: A

protocol providing Host Mobility).

Regarding claim 19, Oishi and VIP: A protocol providing Host Mobility teach the

limitations of claim 18 as applied above. Oishi teaches the packet formats shown in

FIGS. 49, 50, and 51. The terminal 41 transmits the packet to the terminal 42. This

packet is received by the translator 13 and then transmitted to the data packet

translation and process 104 shown in FIG. 19. The data packet translation and process

104 searches the translation table 101 for the virtual destination IP address s6 as a search key (the intermediate driver includes means for changing a source IP address of packets transmitted by the mobile node from the virtual address to the actual address) (See Fig. 49, 50, 51 and Paragraph 93 Oishi).

Regarding claim 21, Oishi and VIP: A protocol providing Host Mobility teach the limitations of claim 18 as applied above. Oishi teaches in Fig 27 a DNS query from a terminal 42 is transmitted to a DNS server 22 via a DNS server 24 since the IP address corresponding to a name T of the terminal 41 is associated with a home address t6, that the translator 11 thereby makes a translation rule for associating t6 with a virtual destination IP address f4, and that the translator 11 treats the virtual source IP address as an IPv6 address 16 of the translator 12 to associate r4 with 16 when making a translation rule since a packet destined for the terminal 42 from the terminal 41 passes through the translator 12 (changing a destination IP address of packets received by the mobile node from the actual address to the virtual address) (See Paragraph 100 Oishi).

Regarding claim 24, Oishi and VIP: A protocol providing Host Mobility teach the limitations of claim 18 as applied above. Oishi teaches Oishi teaches in FIG. 24 a mobile IP client that transmits and receives packets by way of the network layer, the intermediate driver and the network interface.

6.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dorenbosch (US PGPUB 20040028009) and modified by Oishi (US PGPUB

20020154624) as applied to claim 4 above, and further in view of Leung (US Patent

6487605, hereinafter Leung).

Regarding claim 5, Dorenbosch and Oishi teach the limitations of claim 1 as

applied above. Dorenbosch teaches packet data communication from one IP connection

to another (receiving an incoming packet) (See Paragraph 12 Dorenbosch). One of the

common element to switch between any two IP transport media is to route traffic

through an Application Level Gateway that translates (from the corresponding node in

the NAT device) between SCTP and TCP/UDP. Dorenbosch further teaches the

gateway provides Network Address Translation between address Y1 and A1 where Y1

is an external IP address and A1 is a private IP address (the incoming packet having

the public IP address as a destination; a first translating step of translating the public IP

address to the actual IP address of the mobile node, the first translating step being

performed in the NAT device) (See Paragraph 26 and 36 Dorenbosch). However,

Dorenbosch and Oishi do not expressly teach a second translating step of translating

the actual IP address of the mobile node to the virtual IP address of the mobile node,

the second translating step being performed in the mobile node. Inoue teaches the

Address Mapping Table information of a mobile host indicating a correspondence

between a virtual IP address and an actual IP address of a mobile host is transferred

according to the need so that an information for routing up to the mobile host is

sequentially updated (See Fig. 12 and Col. 14 Lines 29-38 Inoue). It would have been

obvious to one having ordinary skill in the art at the time of the invention was made to

translate the actual IP address of the mobile node to the virtual IP address of the mobile

node and the step being performed in the mobile node in order to be capable of

realizing flexible address control and management for the mobile computer (See

Abstract Inoue).

7.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Dorenbosch (US PGPUB 20040028009) and modified by Oishi (US PGPUB

20020154624) as applied to claim 12 above, and further in view of Rezaiifar (US

PGPUB 20040085931, hereinafter Rezaiifar).

Regarding claim 14, Dorenbosch and Oishi teach the limitations of claim 12 as

applied above. Oishi teaches in Fig. 27, 28, and 29 the virtual IP address I6 is used

before and after the movement of terminal with the new coa q6 with a route

optimization. The translation rule has rules for I6 (a first virtual address) and q6(a

second virtual address) in Fig 29 (continuing to use the first virtual address for

connections initiated by the mobile node using the first virtual address, the continuing

use of the first virtual address being concurrent with use of the second virtual address

for connections initiated after the second virtual address is assigned to the mobile

node). However, Dorenbosch and Oishi do not expressly teach an additional node in the

second NAT domain has the same virtual address as the mobile node and assigning a

second virtual address to the mobile node for connections initiated after the mobile node

moves to the second domain. Rezaiifar, in the same field of endeavor, teaches the

PDSNs in a mixed network are modified to prevent having the same IP address

assigned to two different R-P sessions. Any time the FA assigns an IP address to an

IMSI, the FA purges its tables of any other entries bearing the same IP address, regardless of the value of the IMSI. Only one R-P session per IP address is allowed within an FA of a PDSN (See Paragraph 63 and 64 Rezaiifar). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to assign a second virtual address to the mobile node for connections initiated after the mobile node moves to the second domain when an additional node in the second NAT domain has the same virtual address as the mobile node otherwise it would be unable to unambiguously route the packet to a RAN (See Paragraph 63 Rezaiifar).

8.   Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dorenbosch (US PGPUB 20040028009) and modified by Oishi (US PGPUB 20020154624) as applied to claim 1 above, and further in view of Su (US PGPUB 20030172142, hereinafter Su).

Regarding claim 15, Dorenbosch and Oishi teach the limitations of claim 1 as applied above. Oishi teaches a DNS server translating from a virtual IP address to an actual IP address. However, Dorenbosch and Oishi do not expressly teach assigning the virtual and actual IP addresses using Dynamic Host Configuration Protocol. Su, in the same field of endeavor, teaches setting up the DHCP server, a step is firstly to install a WINDOWS server in a computer having NIC in three pieces, in which the first piece is an Ethernet card having a legal IP; the second piece is also an Ethernet card having a virtual IP address; and the third piece is a wireless-LAN card having a virtual IP address (See Paragraph 33 Su). It would have been obvious to one having ordinary

skill in the art at the time of the invention was made to assigning the virtual and actual

IP addresses using Dynamic Host Configuration Protocol because the IP address of

every subscriber computer is set obtainable automatically, therefore the DNS could be

set on the DNS server provided by an ISP (See Paragraph 36 Su).

Regarding claim 17, Dorenbosch and Oishi teach the limitations of claim 1 as

applied above. However, Dorenbosch and Oishi do not expressly teach dividing an

available range of private IP addresses into a first range to be used for actual IP

addresses and a second range to be used for virtual IP addresses. Su teaches setting

up a DHCP server for splitting individual private IP address such that a plurality of IP

addresses is provided to the respective Ethernet and wireless-LAN, and a dynamic IP

address (virtual IP addresses) is assigned to every subscriber end (See Paragraph 24

Su). It would have been obvious to one having ordinary skill in the art at the time of the

invention was made to divide an available range of private IP addresses into a first

range to be used for actual IP addresses and a second range to be used for virtual IP

addresses because the dynamic IP address is set obtainable automatically (See

Paragraph 24 Su).

9.   Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi

(US PGPUB 20020154624) modified by VIP: A protocol providing Host Mobility as

applied to claim 18 above, and further in view of Gillies et al. (US PGPUB

20030212821, hereinafter Gillies).

Regarding claim 20, Oishi and VIP: A protocol providing Host Mobility teache the limitations of claim 18 as applied above. However, Oishi does not expressly teach encapsulating packets transmitted by the mobile node. Gillies, in the same field of endeavor, teaches an example encapsulated communication packet and the set of hierarchical communication packets includes a MAC layer message frame, an attribute routing system message frame, an IP layer message frame, and a TCP layer message frame (See Fig. 4 and Paragraph 72 Gillies). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to encapsulate packets transmitted by the mobile node in order to preferably allow for the message frame to be validated and verified as delivered intact, as is well understood in the art (See Paragraph 73 Gillies).

10.   Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi (US PGPUB 20020154624) modified by VIP: A protocol providing Host Mobility as applied to claim 18 above, and further in view of Su (US PGPUB 20030172142, hereinafter Su).

Regarding claim 22, Oishi and VIP: A protocol providing Host Mobility teache the limitations of claim 18 as applied above. Oishi teaches in Fig. 24 a sequence diagram in which the IPv6 mobile terminal in the foreign network originates a call. S6 is a virtual IP address and t6 is an actual IP address (requesting and receiving from a server the virtual IP address and the actual IP address upon startup of the mobile node)(See Fig. 24 Oishi). However, Oishi does not expressly teach dynamic host configuration protocol

(DHCP). Su, in the same field of endeavor, teaches setting up the DHCP server, a step

is firstly to install a WINDOWS server in a computer having NIC in three pieces, in

which the first piece is an Ethernet card having a legal IP; the second piece is also an

Ethernet card having a virtual IP address; and the third piece is a wireless-LAN card

having a virtual IP address (See Paragraph 33 Su). It would have been obvious to one

having ordinary skill in the art at the time of the invention was made to assigning the

virtual and actual IP addresses using Dynamic Host Configuration Protocol because the

IP address of every subscriber computer is set obtainable automatically, therefore the

DNS could be set on the DNS server provided by an ISP (See Paragraph 36 Su).

Regarding claim 23, Oishi, VIP: A protocol providing Host Mobility , and Su teach

the limitations for claim 22 as applied above. Oishi teaches in Fig. 25 new coa q6 is

associated with the virtual IP address S6 after the movement of terminal T (transmitting

the virtual IP address a server when the mobile node moves to the second subnet, to

allow a new actual IP address to be associated with the virtual IP address) (See Fig. 25

Oishi). However, Oishi does not expressly teach dynamic host configuration protocol

(DHCP). Su, in the same field of endeavor, teaches setting up the DHCP server, a step

is firstly to install a WINDOWS server in a computer having NIC in three pieces, in

which the first piece is an Ethernet card having a legal IP; the second piece is also an

Ethernet card having a virtual IP address; and the third piece is a wireless-LAN card

having a virtual IP address (See Paragraph 33 Su). It would have been obvious to one

having ordinary skill in the art at the time of the invention was made to assigning the

virtual and actual IP addresses using Dynamic Host Configuration Protocol because the

IP address of every subscriber computer is set obtainable automatically, therefore the

DNS could be set on the DNS server provided by an ISP (See Paragraph 36 Su).

Response to Arguments

11.   Applicant's arguments, see Page 12 Line 15, Page 13 Line 9, and Page 15 Line

5, filed 11/8/2007, with respect to the rejection(s) of claim(s) 1-24 under 35

U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection

has been withdrawn. However, upon further consideration, a new ground(s) of rejection

is made in view of VIP: A protocol providing Host Mobility (Communications of the ACM,

August 1994).

Conclusion

12.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Eunsook Choi whose telephone number is 571-270-

1822. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST.
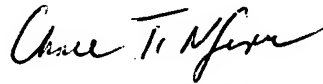
If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eunsook Choi
1/11/2008

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